

Research Project #6

Develop Better Data on Accident
Precursors or Leading Indicators

Improve Data on Accident Precursors or Leading Indicators

Project Purpose

- Identify precursors that might be strong predictors of accidents
- Establish research projects that would evaluate the strength of the precursor to predict accidents

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Project Tasks

- Form Working Group from modal safety experts
- Volpe review of current work

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Project Tasks

- Identify Potential-Accident relationships
- Prioritize Proposed projects
- Develop Research protocols

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Proposed Research Areas

- Evaluation of Data or Method of Collection
- Safety Culture Analysis
- Specific Precursor-Outcome Relationships
- Technology Transfer

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Evaluation of Data or Method of Collection

- Mining to Establish Sequence of Events
 - Use Text Mining to search narrative reports for the sequence of events that resulted in an accident.

Improve Data on Accident Precursors or Leading Indicators Evaluation of Data or Method of Collection

- A Human Factors Analysis of Precursors Associated with Incidents/Accidents
 - Looks at Reason's 'Swiss cheese' model of accidents
 - Incorporates human factors aspects to help understand the combination of factors that result in an accident

Improve Data on Accident Precursors or Leading Indicators Evaluation of Data or Method of Collection

- Other proposals:
 - Retrospective interview and survey information
 - Assessment of data needs for GIS
 - Documentation of safety "successes" as well as failures
 - Various forms of data modeling to establish potential for accidents

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Safety Culture Analysis

- Organizational safety culture and other indicators of accident risk
 - Investigate both the “driver” and the company
 - Workload - an indicator of accident risk
 - Identify “culture” attributes that are characteristic of “problem” operators

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Safety Culture Analysis

- Study the Feasibility of Possible Profiling Systems
 - Investigate the operability and utility of “profiling” of carriers & operators
- Using an Indexing System to Identify Precursors for Vehicle Crashes, Injuries and Deaths
 - Utilize a point system to rate risk of accidents

Improve Data on Accident Precursors or Leading Indicators Specific Precursor-Outcome Relationships

- Experience & Training As Predictor of Hazardous Materials Incidents
- Several other proposals:
 - Noise Levels and Distraction
 - Social Needs and Nocturnal Work Activity
 - Tracking Undeclared Hazardous Materials Shipments
 - Traffic Intensity at the Sector Level
 - Driving Records as a Predictor of Crash Involvement

Improve Data on Accident Precursors or Leading Indicators Technology Transfer

- Use of Flight Data Recorder Technology to Predict Accidents in other modes

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Select Projects for Research

- Input:
 - Stakeholder Input
 - Safety in Numbers Conference
 - DOT Safety Data Task Force
- Top projects to be identified for funding early in 2002.